



# Microgram

## *Bulletin*

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JANUARY 2004

### **Roger Fuelster Reaches 40-Year Mark in Distinguished Federal Career**

On Tuesday, November 25th, Senior Forensic Chemist Roger G. Fuelster of the DEA North Central Laboratory (Chicago, Illinois) was awarded a 40-Year Award Pin at DEA Headquarters for his length of Government service. Roger is a 1963 graduate of Valparaiso University, where he earned his B.S. degree in Chemistry. Two weeks later, he began his Federal career as a chemist with the Food and Drug Administration (FDA) at their Chicago District Laboratory. Over the next five years, he specialized in drug analysis, particularly illicit drugs being encountered in the then rapidly growing “tune-in/turn-on” counterculture. In 1968, Roger



transferred to the Department of Justice, Bureau of Narcotics and Dangerous Drugs (BNDD) at their newly opened Chicago Regional Laboratory, where he became heavily involved in training chemists for the entire laboratory system. In 1973, BNDD was merged into the Drug Enforcement Administration and the Chicago Regional Laboratory became the North Central Laboratory. Roger is also a charter (near-30 year) member of the Midwestern Association of Forensic Scientists (MAFS), which is one of the largest of the regional forensic scientist associations. He has been recognized by both the DEA and by prosecutors he has worked with

throughout his career. The Office of Forensic Sciences salutes Roger for reaching this extraordinary career milestone.

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**- INTELLIGENCE ALERT -**

**COCAINE IN TINNED CANDLES IN GRAND JUNCTION, COLORADO**

The Grand Junction Police Department Laboratory (Grand Junction, Colorado) recently received eight metal tins, each containing a colored, scented candle, suspected of containing cocaine (see Photo 1; dimensions are approximately 5.7 x 5.7 x 3.9, 8.1 x 8.1 x 3.9, and 6.3 x 3.9 x 2.9 inches). The candles were seized by the Grand Junction Police Department from a suitcase in the luggage compartment of a bus at the local Greyhound bus station. Dissecting the candles revealed plastic wrapped packages within the wax shell. Interestingly, the color of the plastic wrap corresponded to the color of the wax (see Photo 2). Presumptive analysis of the powder (total net mass not determined) by the Scott's reagent confirmed cocaine (quantitation not performed). This is the first time the Laboratory has seen cocaine packaged in this manner.

[Editor's Note: A similar seizure (made in Norfolk, Virginia) was reported in the September 2003 issue of *Microgram Bulletin*.]



**Photo 1**



**Photo 2**

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**- INTELLIGENCE ALERT -**

**METHAMPHETAMINE UNDER STAMPS ON LETTERS MAILED TO  
THE ERIE COUNTY PRISON (PENNSYLVANIA)**

The Pennsylvania State Police Erie Regional Laboratory (Erie, Pennsylvania) recently received several letters suspected to have a controlled substance in the envelope glue or laced into the enclosed papers. The letters were submitted by the Pennsylvania Attorney General's Office, and

had been originally seized at the Erie County Prison (photos not available). Two inmates received separate mailings from different outside individuals. The envelopes were standard letter size, and had only one stamp per envelope. Presumptive testing using Marquis Reagent and ultraviolet light on the letters, the glued areas on the envelope flap, the stamps, and the stamp glue were all negative. However, analysis of the paper underlying where the stamps were adhered were presumptively positive for methamphetamine. Extraction with methanol followed by analysis of the extract by GC/MS confirmed methamphetamine (quantitation not performed). This was the second such submission to the Laboratory; however, the previous submission was negative for any controlled substances.

[Editor's Notes: According to the analyst, although quantitation was not performed, the amount of methamphetamine per envelope was rather small, based on the GC/MS response. The analyst also stated that their experience has shown that the envelope paper (especially under the stamp area) must be analyzed when this technique is suspected. There have been a number of similar submissions reported to *Microgram Bulletin* over the past few years, primarily reporting small amounts of heroin under stamps, or paper laced with methamphetamine.]

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**- INTELLIGENCE ALERT -**

**SATURATED AQUEOUS METHAMPHETAMINE HYDROCHLORIDE  
IN A WATER BOTTLE IN SAN JOSE, CALIFORNIA**

The DEA Western Laboratory (San Francisco, California) recently received a plastic 500 milliliter bottle of Refreshe brand spring water that contained approximately 100 milliliters of green-brown, slightly basic, aqueous solution, suspected to be an aqueous solution of methamphetamine hydrochloride (see Photo 3). The bottle was recovered from a hidden compartment in a vehicle in San Jose, subsequent to a consent search by agents from the DEA San Jose Resident Office. Analyses of the solution by GC, GC/MS, and GC/IRD, and a chiral derivatization, confirmed 542 milligrams/milliliter of *d*-methamphetamine hydrochloride (total net mass 54 grams) with trace 1-phenyl-2-propanone (P-2-P). This was the second submission of a saturated aqueous solution of methamphetamine hydrochloride in a plastic bottle to the Laboratory within the past year.



**Photo 3**

[Editor's Note: According to the analyst, there was no dimethylsulfone or any other cutting agent(s) in the solution; therefore, the relatively high concentration suggests that the solution was an intermediate preparation of "Ice" methamphetamine (that is, prior to cooling or evaporation to form crystals).]

**- INTELLIGENCE ALERT -**

**COCAINE IN A PSEUDO-OPERATIONAL CAR BATTERY SUBMERGED  
IN A TUB OF JOINT COMPOUND IN WHEATON, MARYLAND**

The DEA Mid-Atlantic Laboratory (Largo, Maryland) recently received a very unusual submission consisting of an apparently operational car battery submerged in a 5-gallon tub of joint compound, suspected to contain cocaine (see Photo 4). The exhibit was seized from the trunk of a vehicle in Wheaton, Maryland by DEA Agents and Officers from the Montgomery County Police Department. The tub showed no evidence of tampering, and the lid slots had not been cut. Upon disassembly, the battery (dimensions: 25.9 x 16.9 x 20.0 centimeters) was found to have a second, smaller, rechargeable battery inside, internally wired to the main battery's electrodes to create an apparently operational battery (see Photo 5). Also inside the main battery case were five kilo bricks (four marked 1000, one marked 1100) and one smaller compressed brick (marked 300) of compressed powder, plus a wrapped plastic bag of powder (marked 100) (see Photos 6 and 7). Analysis of the powder (total net mass 5472 grams) by GC, GC/MS, and FT-IR confirmed 84 percent cocaine hydrochloride adulterated with caffeine. This was the laboratory's first encounter with this type of smuggling technique.



**Photo 4**



**Photo 5**



**Photo 6**



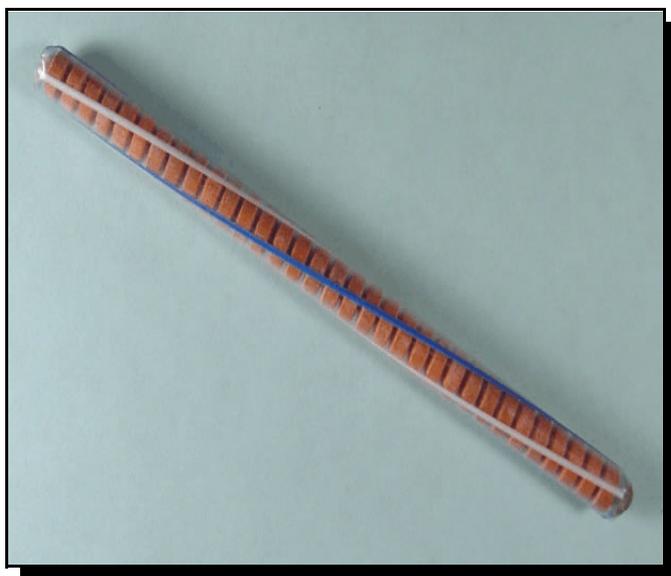
**Photo 7**

**- INTELLIGENCE ALERT -**

**“YA-BA” TABLETS SEALED IN PLASTIC STRAWS IN HONOLULU, HAWAII**

The Source Determination Program of the DEA Special Testing and Research Laboratory (Dulles, Virginia) recently received some “Ya-Ba” tablets (also known as “Thai Tabs”) heat-sealed in what appeared to be plastic drinking straws. The exhibits were mailed from Thailand to Elverta, California and were seized *en route* at the United States Customs mail facility in Honolulu, Hawaii. The first subexhibit was a clear straw with blue and white stripes containing 33 tablets (see Photo 8); the second subexhibit included five short, translucent white straws containing four tablets each (see Photo 9); and the third subexhibit included three reddish colored straws containing 48 tablets total (see Photo 10). In each case, the majority of the tablets were red except for the tablets at each end; in the latter cases, the side of the tablet facing the seal was white - presumably discolored during the heat-sealing process. Except for one tablet, all tablets were 6 millimeters in diameter, and had a variation of the standard “WY” logo. Analysis by GC, GC/MS, IR, and CE confirmed 21-25 milligrams of *d*-methamphetamine hydrochloride and 60-67 milligrams of caffeine per tablet. The lone exception had 6.7 milligrams of *d*-methamphetamine hydrochloride and 40 milligrams of caffeine. This is the first time the Laboratory has encountered this packaging technique.

[Editor’s Note: An overview of “Ya-Ba” tablets was presented in the July 2003 issue of *Microgram Bulletin*.]



**Photo 8**



**Photo 9**



**Photo 10**

**- INTELLIGENCE ALERT -**

**EPHEDRINE FROM LIVESTOCK MINERAL BLOCKS SCAM ENCOUNTERED  
IN BARRY COUNTY, MISSOURI**

[From the NDIC *Narcotics Digest Weekly* 2003;2(49):2  
Unclassified, Reprinted with Permission.]

Investigators from the Southwest Missouri Drug Task Force report that a defendant arrested for possessing chemicals used in the production of methamphetamine alleged that he was able to extract ephedrine from livestock mineral blocks. On November 4, 2003, investigators went to the defendant's Barry County home after witnessing an unusually large number of persons coming and going. Investigators state that they previously had seized chemicals used in the production of methamphetamine at the defendant's home. Upon speaking to the defendant, they again discovered he possessed chemicals including anhydrous ammonia, lye, and ether. Investigators also found trace quantities of methamphetamine at the home. During their discussion with the defendant, he provided the investigators with a recipe for allegedly extracting ephedrine from mineral blocks. According to the recipe, ephedrine could be obtained by sending a 220-volt current through a bucket containing a livestock mineral block. The defendant was arrested and charged with possession of anhydrous ammonia in an unapproved container.

NDIC Comment: Law enforcement officers in other Midwest states also have reported discoveries of mineral or salt blocks as well as chicken feed and empty chicken feed sacks at methamphetamine laboratory sites. Some of these officers have speculated that producers might extract ephedrine or pseudoephedrine from these products. However, according to Drug Enforcement Administration (DEA) chemists, recipes suggesting that ephedrine or pseudoephedrine can be extracted from chicken feed or livestock mineral blocks for use in methamphetamine production are erroneous. Moreover, scientists from a major livestock feed producing company reviewed contents of mineral blocks and chicken feed and concluded that these products contain no ephedrine or pseudoephedrine. Mineral blocks, however, do contain salt that might be extracted for use in the methamphetamine production process.

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**- INTELLIGENCE ALERT -**

**MARIJUANA IN FACTORY-SEALED CANS IN LAWRENCE COUNTY, MISSOURI**

[From the NDIC *Narcotics Digest Weekly* 2003;2(49):3  
Unclassified, Reprinted with Permission.]

On November 8, 2003, officers with the Missouri State Highway Patrol (MSHP) in Lawrence County seized approximately 200 pounds of marijuana that were concealed in food cans that appeared to be factory-sealed. After stopping an SUV that was traveling east on Interstate 44 for speeding, an MSHP officer became suspicious when the driver provided conflicting information about the nature of his travel. The officer requested and received consent to search the vehicle,

and he and other assisting MSHP officers discovered 43 cans that appeared to be factory-sealed in the rear cargo compartment of the SUV. The large size cans (number 10) bore commercial labels from legitimate food companies. The labels suggested that the contents of the cans were jalapeños, tomatoes, tomato sauce, and white hominy. After the officers discovered the cans, the driver continued to provide conflicting information about the nature of his travels as well as his reason for transporting the cans. The officers further inspected one of the cans, opening it to discover a brick of marijuana weighing 4.7 pounds. A subsequent inspection of all the cans revealed that each of them contained similar bricks of marijuana. The driver--a resident of Hamilton County (OH)--was arrested and charged with possession of marijuana with intent to distribute. Two passengers in the SUV were released. Officers believe that the cans were packaged in Mexico and possibly were being transported from Los Angeles (CA) to Cincinnati (OH) at the time of the interdiction. Agents from the DEA Springfield Resident Office assisted in the investigation.

NDIC Comment: Hiding illicit drugs in food cans that appear to be factory-sealed presents a particularly challenging concealment technique for law enforcement officers to uncover. In many instances the cans are completely sealed, bear legitimate commercial labels, and weigh approximately the same as the weight identified on the label. In the above incident, the traffickers had wrapped bricks of marijuana in plastic and placed each brick inside a can with enough water to provide the "feel" of a legitimate food product and the approximate weight of 3 kilograms to correspond to the product label. Other seizures of marijuana from food cans that appear to be factory-sealed previously have occurred in the United States. Examples of these seizures include more than 10,000 kilograms of marijuana in canned drinks from Jamaica and nearly 1 kilogram of BC Bud marijuana in maple syrup cans from Quebec.

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[Editor's (Additional) Note: This methodology (smuggling controlled substances in factory-sealed cans) has also been reported for cocaine, heroin, and methamphetamine in several recent issues of *Microgram Bulletin* and (earlier) in *Microgram*.]

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**- INTELLIGENCE BRIEF -**

**5-METHOXY-*ALPHA*-METHYLTRYPTAMINE IN SOUTHWEST MICHIGAN**

The Lansing Forensic Laboratory (Lansing, MI) recently received 10 milligrams of white powder contained in a foil package, suspected methamphetamine (photo not taken). The exhibit was submitted by the South West Enforcement Team (SWET; a drug task force administered by the Michigan State Police), and was included with a number of exhibits seized during a raid at a methamphetamine laboratory in Southwest Michigan (exact locale withheld). Analysis by GC-MS, however, indicated not methamphetamine but rather 5-methoxy-*alpha*-methyltryptamine (5-MeO-AMT), based on the mass spectrum reported in the May 2003 issue of *Microgram Bulletin*. This is the laboratory's first encounter with 5-MeO-AMT. Three other exhibits submitted in the case contained a total of approximately 10 grams of methamphetamine.

- INTELLIGENCE BRIEF -

**UNUSUAL POLYDRUG SEIZURE IN ELLSWORTH, KANSAS**

The Kansas Bureau of Investigation Laboratory (Great Bend, Kansas) recently received a polydrug submission from the Ellsworth County Sheriff's Office that included a variety of tablets and pills. The drug exhibits, and \$1400 cash, were recovered from a backpack that was found at an accident scene on I-70 in Ellsworth County where a vehicle rolled off the road (Ellsworth County is located about 150 miles west of Topeka). Included in the submission were: A) 21 clear capsules that contained white powder (Photo 11), total net mass not recorded; analysis by color tests and GC/MS indicated 4-bromo-2,5-dimethoxyphenethylamine (2C-B). B) 100 tan round tablets with the Rolex "crown" logo (Photo 12), total net mass not recorded; analysis by color tests and GC/MS indicated a (roughly) 3:1 mixture of MDMA and methamphetamine. C) 50 brownish colored, presumed LSD micro-tablets (Photo 13), total net mass not recorded; analysis by TLC and GC/MS confirmed LSD. D) 20 milligrams of white powder in a folded piece of paper; analysis by GC/MS indicated presumed 2,5-dimethoxy-4-ethylthiophenethylamine (2C-T-2) (standard not available). Additional subexhibits included psilocybin mushrooms, marijuana, hashish, diazepam tablets, and alprazolam tablets (total net masses not reported for any of these subexhibits). None of the various subexhibits were quantitated. This was the Laboratory's first ever encounter of 2C-B and 2C-T-2. Amusingly, one the three accident victims later called the Ellsworth County Sheriff's Office inquiring about the lost backpack - he claimed that the cash was his, but not the drugs.



**Photo 11**



**Photo 12**



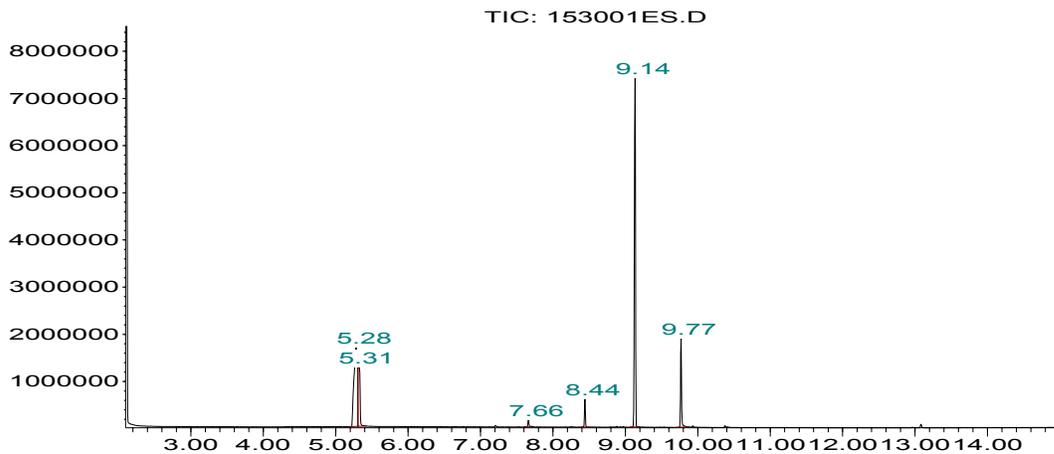
**Photo 13**

- INTELLIGENCE BRIEF -

**METHAMPHETAMINE HYDROCHLORIDE CONTAINING AN UNUSUAL SOLVENT MIXTURE IN COUNCIL BLUFFS, IOWA**

The DEA North Central Laboratory (Chicago, Illinois) recently received a submission of 28 packages of suspected methamphetamine, ranging from 200 - 500 grams each, total net mass 7.5 kilograms. The exhibits were seized by the DEA Sioux City HIDTA Group from a distributor in the Council Bluffs, Iowa area. Each package consisted of a clear zip-lock plastic bag wrapped with clear tape containing a moist (oily), off-white crystalline substance. Analysis of these items by GC/MS, FTIR (after sublimation to remove dimethylsulfone), and GC (after a hexane wash) confirmed low quality *d*-methamphetamine hydrochloride, ranging between 2.0 - 3.6 percent purity, cut with over 90 percent dimethylsulfone. Unusually, the residual solvent in the samples was found to be a hydrocarbon mixture including tridecane, tetradecane, pentadecane and hexadecane (that is, C-13 to C-16) in an approximate 1:20:4:2 ratio (see TIC trace below). The presence of this mixture was of particular concern as the laboratory utilizes tridecane as the internal standard in the quantitation of methamphetamine (this necessitated the above referenced hexane wash to remove the residual solvent). Subsequent submissions of liquid samples in the same case were also found to contain methamphetamine, dimethylsulfone and the same hydrocarbon mixture. Various inquiries were unable to determine the identity or source of the unusual hydrocarbon mixture. This was the first encounter with this hydrocarbon mixture at the laboratory.

Abundance



Time-->

Peaks: 5.3 minutes, dimethylsulfone; 7.7 minutes, unknown; 8.4 minutes, C-13; 9.1 minutes, C-14; 9.8 minutes, C-15, and ~10.4 minutes, C-16.

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## Selected Intelligence Brief

### ECSTASY AND CLUB DRUG TRAFFICKING IN THE PACIFIC NORTHWEST

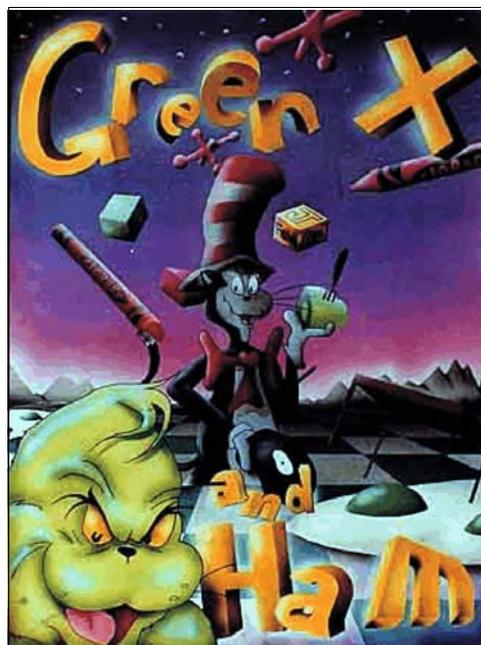
DEA Seattle Field Division  
Division Intelligence Group

206/553-1030

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#### Summary

The use and availability of Ecstasy and club drugs have steadily increased in the Seattle Field Division (FD) area of jurisdiction, which comprises Alaska, Idaho, Oregon, and Washington. New medical research confirms decay of the brain or chemical make-up of those who abuse 3,4-methylenedioxymethamphetamine (MDMA), commonly known as Ecstasy, gamma-hydroxybutyrate (GHB), or ketamine. The research also confirms that medically unsupervised withdrawal from GHB can be deadly. Ecstasy and club drugs continue to be popular beyond the rave scene with users in the 12-through-25 age group. Intelligence information, based upon enforcement action and confidential source information, reveals that MDMA pills and powder, ketamine, and other synthetic drugs are smuggled over the borders and throughout the United States by mail, car, air, and boat from European, Mexican, and possibly domestic origins. Trends show that the complex and highly organized polydrug distribution organizations operating within and throughout the Seattle FD are tapping into the wide-profit margin of MDMA trafficking.



Increased law enforcement and media attention to Ecstasy and club drug distribution in the Seattle FD continues to reveal widespread availability. In August 2000, Ecstasy tablets were brought into Oregon from Amsterdam, the Netherlands, and sold at the low price of \$10 per tablet to test the marketability in the Bend area. In September 2000, 100,000 Ecstasy pills destined for Anchorage, Alaska, via commercial airlines, were seized in China. On November 16, 2001, a courier was stopped at Seattle's Tacoma International Airport and arrested for transporting 111,910 MDMA pills. These pills were from Amsterdam. In February 2002, there were seven GHB overdoses at a single rave party in the Portland, Oregon, area. In March 2002, 124 10-milliliter (ml) vials of Mexican ketamine were found in a rental car out of Hillsboro, Oregon. On April 1, 2002, a FedEx package containing approximately 25,000 MDMA pills arrived in Bellevue, Washington, as a controlled delivery. The package was originally from an unknown overseas location, repackaged and sent to New Orleans, then to Nashville, and finally Bellevue.

A Seattle investigation, which ended in March 2002, dismantled a polydrug organization that distributed marijuana, MDMA, and cocaine. A Seattle distributor from this investigation received MDMA pills

from several sources, including sources in California and Nevada. Several Seattle district offices investigations are linked to Canadian sources for MDMA. The Royal Canadian Mounted Police (RCMP) in Vancouver, British Columbia, has noted an increase in the supply of seized MDMA, with 1,000-tablet shipments, known as "boat" shipments, the most common. A case out of Boise, Idaho, successfully prosecuted a rave venue and promoter.



**Cuddle puddle at a Boise Rave**

Ecstasy and club drug use and abuse is a relatively new phenomenon to the medical community in the Northwest, with few hospitals and treatment centers prepared to handle this type of drug abuse. One Seattle hospital, Harborview Medical Center, has been testing for MDMA for only 3 years and for GHB for 2 years. When large raves are held in the greater Seattle area, this hospital receives the patients, since it is one of the few hospitals in the area, which commonly tests for MDMA and GHB.

King County (Seattle, Washington) Drug Abuse Trends reports on the abuse of GHB. Emergency rooms report incidents of intoxication and incapacitation occurring at the rate of two to three per week, and GHB is regularly being tested for in driving under the influence (DUI) incidents. Medical research has compared severe GHB withdrawal to heroin withdrawal.

The Seattle FD, in conjunction with local law enforcement authorities, continues to target Ecstasy and club drug traffickers on multiple levels of distribution, as well as targeting drug activity at raves. New information, regarding precursor chemicals related to MDMA production and the analogs of GHB, has produced investigative leads toward traffickers and MDMA laboratory activity in the Seattle FD.

### **Patterns of Use and Impact to Society**

Since January 2001, the Source Determination Program (SDP) at the Special Testing Laboratory in Virginia has produced a Club Drug Monthly Report. The program reports on Ecstasy and club drug seizures nationwide, tracks ballistics, provides a description of the tablet monogram and other physical characteristics, and identifies the current and past cases from that particular illicit tableting source. According to the SDP Club Drug Monthly Report, released in February 2002, MDMA pills purchased in a closed Seattle investigation had similar markings as pills purchased or seized in cases out of Illinois, Maryland, New Jersey, New York, and Virginia. The pills, which were seized at the Newark, New Jersey, airport, arrived from an Amsterdam flight. The pills seized in Buffalo, New York, were found during a search of a vehicle crossing the U.S.-Canadian border.



**Seized Ecstasy Pills**

The Club Drug Monthly Report dated November 2001, identified pills, seized at the Portland Airport in August 2001, that were found to have similar ballistic markings as pills seized or purchased in Florida, Maine, and New Mexico, New York, and Virginia.

The Alaska State Crime Laboratory, for the years 2000 through 2001 (up to May 9, 2001), documented 2 submissions of MDMA powder, totaling .5 grams; 9 submissions of MDMA tablets, totaling 1,199 tablets; and 18 submissions of LSD, with 1,630 total hits and 21 ml of liquid. There have been no reports of GHB and ketamine seizures from the Alaska State Laboratory.

The Washington State Crime Laboratory, for the years 2000 through 2001 (up to April 19, 2001), had 174 submissions of MDMA, 43 submissions of MDA (an analog of MDMA), and 44 submissions of LSD. There have been no reports of GHB and ketamine seizures from the Washington State Laboratory.

The Idaho State Crime Laboratory, for the years 2000 through 2001 (as of May 7, 2001), noted 27 MDMA submissions, 2 MDA submissions, 35 LSD submissions, and 3 submissions of 1,4-butanediol (an analog of GHB).

Oregon State Laboratories no longer maintain drug submission statistics, but report that MDMA submissions occur almost daily at the Portland Laboratory. These submissions are mostly in tablet form, and frequently turn out to be MDA. There has been a notable increase in ketamine submissions since November 2000. GHB has been seen in some DUI investigation submissions.

### **Use and Treatment**

According to The Partnership for a Drug Free America annual survey, the number of teenagers across America who said that they have tried Ecstasy rose by 20 percent in 2001, and 71 percent since 1999. The survey of 6,937 teenagers found that 12 percent of 12-to-18 year olds had used MDMA at some point in their lives.

According to the June 2002 issue of Recent Drug Abuse Trends for Seattle, MDMA and GHB emergency department mentions during the first half of 2001 decreased by 14 percent. GHB use among gay men in bathhouses, bars, and sex clubs is reportedly increasing, particularly among men under the age of 30. The King County Medical Examiner reports no deaths during the second half of 2001 involving ketamine or GHB. There was one death from MDMA reported, a 15-year-old female. From 1999 through 2001, there were a total of five MDMA-related deaths. All were Caucasian, between the ages 15 and 28; three had only MDMA present, while one also had methamphetamine, and also had cocaine detected. A survey given to 71 participants of a substance abuse recovery program in Seattle reveals that 44 percent of patients, aged between 14 and 24 years, reported having ever used MDMA, while 30 percent had used this drug in the last 6 months. The survey also showed that 14 percent of patients, aged between 14 and 24 years, reported having ever used ketamine, while 6 percent had used this drug in the last 6 months.

Data collected in November 2000 from the Washington State Survey on Adolescent Health Behaviors revealed King County (Seattle area) youth using Ecstasy and similar club drugs as early as in 6th grade. Young respondents indicated they had used MDMA and related compounds within 30 days prior to taking the survey at the following rates:

6 <sup>th</sup> grade	about 1.0 percent
8 <sup>th</sup> grade	about 3.7 percent
10 <sup>th</sup> grade	about 6.2 percent
12 <sup>th</sup> grade	about 9.0 percent

From January to October 2000, there were 12 GHB-related DUI cases in Washington State. Several sexual assault victims have been admitted to Seattle's King County area hospitals with symptoms similar to GHB intoxication, but due to its rapid elimination from the body, only one sexual assault case has tested positive for GHB to date. Additionally, only one GHB-related death has been reported in Washington State as of July 2002.

### **Trafficking Routes and Smuggling Methods**

Ecstasy and club drug investigations in the Northwest have confirmed transport of MDMA from trafficking organizations based out of the Las Vegas, Nevada, area to Seattle. These investigations have also discovered that MDMA is produced in Bulgaria, then smuggled through Greece and Western Europe to the United States.

In November 2001, a courier was apprehended at Seattle's Tacoma International Airport smuggling approximately 111,910 MDMA pills, disguised as a wrapped birthday gift, in her baggage. Through further investigation and interviews, the MDMA had originated from Amsterdam and the courier had recently made trips to other destination points in the United States, including New Jersey and Texas.

In April 2002, MDMA was discovered at a storage unit, hidden in pieces of lumber, in Tukwila, Washington. Further investigation revealed a connection to an international MDMA trafficking organization, which ships the MDMA in lumber from Israel to Romania, to a warehouse in Miami, Florida.



**Seized Ketamine**

According to the Asian Organized Crime Meeting on February 6, 2002, high levels of ketamine have been discovered in seized Ecstasy. Ketamine has been shipped as "health food" and carried as contact lens solution. According to information gained from an Ecstasy and Club drug investigation in Boise, Idaho, ketamine and LSD are moved by car from Portland to Boise.

In March 2002, two packages, containing approximately 25,000 MDMA pills, were sent out from Europe, shipped to New Orleans, then to Nashville, and in-route to Bellevue, via FedEx. All the mentioned destinations were rented business offices. These packages were associated with an organization that smuggles the MDMA from Amsterdam and Germany into the United States via commercial flights.

In March 2002, a Hertz car rental company representative contacted the Hillsboro, Oregon, Police Department to report that several plastic bags containing 124 10-ml vials of TTOKKYO and KETAPHORTE brands of Mexican ketamine were pulled from the door panels of a rental car.

On April 21, 2002, the Missouri State Highway Patrol conducted a traffic stop on a rental sport utility vehicle from California. Upon inspection, 3,998 10-ml vials of TTOKKYO brand Mexican ketamine were found, and both driver and passenger were detained. The passenger had a valid Washington driver's license and was traveling from California to New York.

At the 2002 Club Drugs Conference in Sun Valley, Idaho, an Ecstasy and club drugs expert, Dr. Gauvin, stated that a courier was apprehended in Illinois transporting MDMA by ingesting balloons. Authorities

recovered 232 balloons from the individual, with each balloon containing from 5 to 6 pills.

### **Manufacturing and Chemical Diversion**

A chemical company out of Texas, provided customers with 1,4-butanediol, an analog of GHB, and precursor chemicals for the manufacture of MDMA. According to the seized customer list, there were various 1,4-butanediol customers in Washington, Oregon, and Idaho. According to the seized customer list, there were customers of Ecstasy-related precursor chemicals in Washington, Oregon, and Alaska. While only one Ecstasy laboratory has been seized in the Northwest since 1998, the appearance of more clandestine MDMA laboratories seems inevitable.



**GHB**

A Paris company sold sassafras oil off their Internet site until September 2001, when French legislation banned the import or export of these chemicals. Saffrole, an ingredient used in the manufacture of MDMA can be easily extracted from the oil. Both saffrole and sassafras oil are controlled chemicals in the United States, and cannot be imported without authorization. In January 2002, the Paris company passed along their list of U.S. customers who purchased sassafras oil before September 2001. Individuals were identified and provided Seattle addresses for their orders of sassafras oil placed in May and September 2000. One customer in Seattle purchased sassafras oil from this site, and Ecstasy-related chemicals from a chemical company during the same month.

A nationwide investigation began in July 2002, regarding the sale and distribution of 1,4-butanediol and GBL, analogs of GHB. The target Internet companies distributed nationwide to include customers in Idaho, Oregon, and Washington.

According to the EPIC database, there were 5 MDMA clandestine laboratories seized nationwide (including federal, state, and local totals) in 1998, 19 seized in 1999, 8 seized in 2000, 20 seized in 2001, and 4 seized as of July 12, 2002. The only Northwest MDMA laboratory seized was in Oregon in 1998.

In the lower mainland of Canada, which includes the city of Vancouver and the surrounding municipalities, four MDMA laboratories were seized in 1999, two seized in 2000, and five seized through December 3, 2001. These statistics include active, producing laboratories, as well as stored chemicals and static laboratories.



**MDMA "Ying-Yang" Tablets  
Seized by DEA**

According to the RCMP "E" Division Headquarters, two GHB laboratories were discovered in Oregon early in 2002. The first laboratory, which was discovered on January 24, 2002, was in conjunction with the discovery of a methamphetamine laboratory. According to agents, the defendant had ordered GBL from a Canadian company. The company would then mail between 10 and 15 1-pint containers, disguised as fingernail polish remover. The defendant would then heat up the GBL, add sodium hydroxide, use pH test strips to find the desired level, then package the final product in old water and pop bottles.

A mushroom grow was discovered 40 miles north of Spokane, Washington, on May 7, 2002, by the Pend Oreille Sheriff's Department.

In June 2002, authorities followed suspects to a storage shed in Everett, Washington, where a large crate was loaded into a van. Once at the Canadian border, the suspects' van was searched, and a pill press with positive MDMA residue was found in the crate.

### **Pharmacological Effects**

According to the British Journal of Pharmacology, a recent study on the effects of ketamine found that abuse of the chemical permanently damages the neurons, leaving visible holes in the cortex of the brain.

A "quality" tablet of Ecstasy contains an average of between 75 and 100 milligrams (mg) of MDMA. For the average person, a normal dose is between 75 mg and 125 mg. The experienced high can last from 3 to 5 hours.

The short-term effects of MDMA abuse consist of accelerated heart rate, increased blood pressure, muscle cramps, panic attacks, fainting episodes, overheated internal organs, and dehydration.

According to the National Institute on Drug Abuse (NIDA), medical research has found that MDMA has been linked to long-term damage to those parts of the brain critical to thought and memory. This drug kills off the part of the nerve in the brain that releases serotonin, the chemical which controls sleep, sexual function, memory, appetite, and mood. As a result, it takes time for the human brain to rebuild its serotonin levels. For people who take MDMA in moderate to high doses, this depletion of serotonin may be long-term. There has also been evidence of liver damage associated with consistent use of this drug.

According to a study published in the November 2001 issue of The Lancet Medical Journal, Ecstasy may cause more brain damage in women than in men. The study compared brain scans of people who had taken 50 or more MDMA tablets in their lifetimes with those of a group who had never taken the drug. The findings indicated that women lost a more significant number of brain cells than men, even though the men had taken more MDMA over the years. The research team stated that larger studies will be needed to confirm the results.

In a report published in the May 1, 2001, issue of the Journal of Neuroscience, researchers found the first evidence that a mother's use of MDMA during pregnancy may result in specific types of long-term learning and memory impairments in her children. This research, conducted in a laboratory, found that the Ecstasy-induced impairment in both sequential and spatial memory-based learning was long term, and was still apparent after the individual reached adulthood.

Data from a new study by Dutch researchers suggests that psychological problems and memory deficiencies associated with regular MDMA use are not reversed by prolonged abstinence. MDMA has also been found to cause premature aging.

The short-term effects of GHB include an overall drunken appearance with slurred speech, loss of muscle coordination, low vital signs and unconsciousness. Medical research concludes that there is a high risk of addiction through daily use of GHB or its precursors. Withdrawals from GHB have been compared in the medical field to heroin withdrawal, and can be deadly without physician supervision.

## Legislation

As of May 1, 2001, the federal penalties for MDMA distribution rose, while the amount required for prosecution fell. Under the new sentencing guidelines, a seizure of approximately 800 tablets will result in from 78 to 175 months' imprisonment.

On November 7, 2001, the Food and Drug Administration (FDA) granted approval for medical research of Ecstasy as a treatment of post-traumatic stress disorder. The study is financed by the Multidisciplinary Association for the Psychedelic Studies, which advocates the use of psychedelic drugs for therapy.

On November 15, 2001, the Seattle Post Intelligencer newspaper reported the November 6, 2001, arrest of a Portland man for distribution of MDMA to a 19-year-old woman who later died. The suspect will be the first Oregon trafficker to face prosecution for the death of a user. The 20-year-old trafficker was charged with manslaughter and distributing a controlled substance.

In March 4, 2002, Oregon adopted an emergency temporary rule which amended the state's list of Schedule I Controlled Substances to include GBL and 1-4 butanediol. On July 17, 2002, the FDA approved GHB as a Schedule III drug in the treatment and research of cataplexy, a rare form of narcolepsy.

## Emerging Trends

### Synthetics

Drug traffickers are searching for synthetics with similar MDMA effects to sell to customers in order to bypass the controlled substances laws; however, these drugs may be prosecutable under the analog acts. In March 2002, the Bureau of Customs and Border Protection in Anchorage seized a package containing \$9,900 and an order for alpha-methyltryptamine (AMT) and 5-methoxy-N,N-diisopropyltryptamine (5MeO-DIPT). The order was sent from China to a business in Phoenix, Arizona, which sold the chemicals over the Internet. In a Boise investigation, an individual was prosecuted under the analog act for distribution of 5MeO-DIPT, known as "Foxy" and "Foxy Methoxy."



**Various Forms of 2C-B**

The drug, 4-bromo-2, 5-dimethoxyphenethylamine (2C-B), known as "Nexus," has recently been identified in the Seattle FD. Nexus is frequently discussed in Northwest rave chat rooms on the Internet, and has appeared in other DEA investigations throughout the nation. Diethyltryptamine (DET), a drug first invented to imitate a psychotic state for psychological/medical experiments, has appeared in the Boise rave scene.

The synthetic, 2,5-dimethoxy-4-(N)-propylthiophenethylamine (2-CT-7), also known as "Blue Mystic," is a common drug in the Ecstasy and club drug scene. There has only been one noted death from 2-CT-7 at

Harborview Medical Center in Seattle. The toxicology report states that the individual died of MDMA toxicity; however, 2-CT-7 was noted in the opinion portion of the autopsy report. This synthetic is regularly discussed on drug websites, and has been noted in two deaths out of Oklahoma and Tennessee.

On July 18, 2002, 2-CT-7 structurally related to Schedule I, 2C-B and other Schedule I hallucinogens, DOM and DOB, was placed on an emergency scheduling notice, with the intent to deem 2-CT-7 a Schedule I drug. The synthetic, 2-CT-7, produces visual hallucinations and is a sulfur analog of 2C-B.



**Vial of 2-CT-7**



**2-CT-7 Pills**

A new trend noted around the nation is the sale of benzylpiperazine (BZP) as Ecstasy. On July 18, 2002, BZP and 1-3-trifluoromethylphenyl (TFMPP), promoted as legal alternatives to Ecstasy, were placed on an emergency scheduling notice with the intent to deem them Schedule I drugs. BZP acts as a stimulant similar in effects to amphetamine, producing euphoria and increased heart rate, systolic blood pressure and pulse rate. TFMPP produces hallucinogen-like effects and is a serotonin-releasing agent and binds to serotonin receptors in the brain. Another trend noted is the use of various prescribed benzodiazepines, taking the place of Rohypnol, in sexual assaults.

### **Violence**

On January 23, 2002, federal search warrants were served at several residences and businesses to conclude a Seattle investigation. Fourteen guns were seized during the search warrants.

On February 21, 2002, a jury convicted a target from a Boise MDMA investigation, for distributing MDMA and possession of a firearm during trafficking.

### **Drug Combinations**

In the Corvallis, Oregon, area, a distributor trafficks a combination of MDMA and heroin, called H-bombs, or Yellowjackets. A new combination, CK, is a mixture of cocaine and ketamine. This mixture is usually taken in snorts from an inhaler, with 40 mg per snort. Another new combination, called Trail Mix or Chex Mix, contains Viagra and MDMA, or Viagra, MDMA, and cocaine. In Salem, Oregon, a new combination was noted that combined ketamine and LSD.

### **Other Cases**

The U.S. Air Force Base at Mountain Home, Idaho, has reported an increase in MDMA cases and cites MDMA as the second most frequently abused drug by airmen stationed at the base. The U.S. Navy declared certain rave venues in the Seattle area and events sponsored by certain rave promoters off-limits to personnel because of an increase in the MDMA trafficking and use. Military units in Anchorage and

Fairbanks, Alaska, have noted an increase in drug-test failures because of Ecstasy use.

Polydrug organizations are tapping into the wide-profit margin of MDMA trafficking. In Seattle cases, marijuana and cocaine traffickers also supply MDMA. In a Seattle investigation, a Canadian MDMA source of supply has offered an exchange of MDMA for cocaine.

## Conclusion

MDMA distribution organizations in the Seattle FD continue to supply users with the "hug drug" and its analogs. Research has shown that the public, school personnel, medical professionals, and some local law enforcement agencies are unaware of the dangers of these drugs and the severity of abuse. The widespread Ecstasy and club drug culture has overrun the rave party boundaries, blending with the mainstream. Education and increased public awareness about these Ecstasy and club drugs, deemed harmless by their appearance and clandestine marketing, will highlight them as detrimental and dangerous chemicals. Increased law enforcement presence in the local Ecstasy and club drug scenes may discourage the trafficking and use of these drugs. DEA's coordinated effort in targeting Ecstasy and club drug traffickers, including rave promoters and venues nationwide will ultimately identify international sources for these drugs.

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## SELECTED REFERENCES

[Note: Selected references are a compilation of recent publications of presumed interest to forensic chemists. Unless otherwise stated, all listed citations are published in English. If available, the email address for the primary author is provided as the contact information. Listed mailing address information (which is sometimes cryptic or incomplete) exactly duplicates that provided by the abstracting services.]

1. James SH, Nordby JJ, Eds. **Forensic science: An introduction to scientific and investigative techniques.** CRC Press LLC: Boca Raton, FL. [Editor's Notes: No abstract was provided. The book is reviewed by RE Gaensslen in *Pharmaceutical Research* 2003;20(9):1516. Contact: USA (no further addressing information was provided).]
2. Niemann RA, Gay ML. **Determination of ephedrine alkaloids and synephrine in dietary supplements by column-switching cation exchange high-performance liquid chromatography with scanning-wavelength ultraviolet and fluorescence detection.** *Journal of Agricultural and Food Chemistry* 2003;51(19):5630. [Editor's Notes: The title analysis was performed on various dietary supplement products. Contact: RA Niemann, US FDA, Ctr Food Safety & Appl Nutr, 5100 Paint Branch Pkwy, College Pk, MD 20740.]
3. Tsujikawa K, Kanamori T, Iwata Y, Ohmae Y, Sugita R, Inoue H, Kishi T. **Morphological and chemical analysis of magic mushrooms in Japan.** *Forensic Science International* 2003;138(1-3):85. [Editor's Notes: Analyses included the complementary use of a scanning electron microscope (SEM), along with standard microscopy and HPLC/UV. Listed substrates included *Psilocybe cubensis* and *Copelandia*. Contact: National Research Institute of Police Science, 6-3-1 Kashiwanoha, Kashiwa, Chiba 277-0882, Japan.]

4. Fucci N. **Growing cannabis with naphthalene in Rome.** Forensic Science International 2003;138(1-3):91. [Editor's Notes: Presents the analysis of marijuana that was treated with naphthalene as a pesticide in a moderate sized home grow operation (80 plants); naphthalene was found in high concentration in the marijuana. Contact: [fortox@rm.unicatt.it](mailto:fortox@rm.unicatt.it)]
5. Muratsu S. **An application of synchrotron radiation to the analysis of forensic samples, mainly drugs of abuse.** Bunseki Kagaku 2003;52(11):1061. [Editor's Notes: No abstract was provided. This article is written in Japanese. Contact: Japan (no further addressing information was provided).]

#### **Additional References of Possible Interest:**

1. Al-Motarreb A, Baker K, Broadley KJ. **Khat: Pharmaceutical and medical aspects and its social use in Yemen.** Phytotherapy Research 2002;16:403. [Editor's Notes: Includes an overview of the history, cultivation, and constituents of khat; however, primary focus appears to be pharmacology. Contact: Dept of Pharmacology, Welsh School of Pharmacy, Cardiff University, Cathays Park, Cardiff, CF10 3XF, UK.]
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4. Madej K, Wozniakiewicz M. **Application of capillary electrophoresis to analysis of tricyclic psychotropic drugs.** Z-Zagadnien-Nauk-Sadowych 2002;52:52. [Editor's Notes: Includes the analyses of pharmaceutical products containing promazine and desipramine. Contact: Faculty of Chemistry, Jagiellonian University, Cracow, Poland.]
5. Shearer GL. **Contaminant identification in pharmaceutical products.** Microscope 2003;51(1):3. Editor's Notes: Presents a review of the title topic. Contact: 850 Pasquinelli Drive, Westmont, IL 60559.]
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7. Steckley SL, Darwin WD, Henningfield JE, Huestis MA, Pickworth WB. **Letter to the Editor: Eclipse can deliver crack cocaine.** Nicotine and Tobacco Research 2002;4(Suppl. 2):S189. [Editor's Notes: Presents an investigation of the adaptive use of a commercial nicotine delivery device for smoking crack. Contact: Intramural Research Program, National Institute on Drug Abuse, Baltimore, MD (zip code not provided).]
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9. Staack RF, Fritschi G, Maurer HH. **New designer drug 1-(3-trifluoromethylphenyl)-piperazine (TFMPP); gas chromatography/mass spectrometry and liquid chromatography/mass spectrometry studies on its phase I and II metabolism and on its toxicological detection in rat urine.** Journal of Mass Spectrometry 2003;38(9):971. [Editor's Notes: The title study is presented; *may* include spectral data (not clear from abstract).]
10. Kiraly B, Sanami T, Doczi R, Csikai J. **Detection of explosives and illicit drugs using neutrons.** Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms 2003;213:452. [Editor's Notes: Presents a Thermal Neutron Activation technique for the title analyses. The "illicit drugs" were not specified in the abstract. Contact: Institute of Experimental Physics, University of Debrecen, Pf. 105, Debrecen 4010-10, Hung.]
11. Vittiglio G, Bichlmeier S, Klinger P, Heckel J, Fuzhong W, Vincze L, Janssens K, Engstrom P, Rindby A, Dietrich K, Jembrih-Simburger D, Schreiner M, Denis D, Lakdar A, Lamotte A. **A compact  $\mu$ -XRF spectrometer for (in situ) analyses of cultural heritage and forensic materials.** Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms 2003;213:693. [Editor's Notes: XRF = X-ray Fluorescence. The "forensic materials" were not described in the abstract. Contact: Chemistry Department, University of Antwerp, Universiteitsplein 1, Antwerp B-2610, Belg.]
12. Smith WD. **SAW chip sniffs out cocaine.** Analytical Chemistry 2003;75(23):492A. [Editor's Notes: Presents an overview of the use of surface acoustic wave based devices for detecting cocaine vapor or particulate. Contact: No contact information was provided.]
13. Felton MJ. **Lab on a chip: Poised on the brink.** Analytical Chemistry 2003;75(23):505A. [Editor's Notes: Presents a review of the topic, and an overview of the available instrumentation in the field. Contact: No contact information was provided.]
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15. Sychev KS, Sychev SN. **Application of universal mobile phases in high-effective liquid chromatography for analysis of the objects of food industry, criminology and pharmaceutical chemistry.** Zavodskaya Laboratoriya, Diagnostika Materialov 2003;69(9):8. [Editor's Notes: Various diethylammonium based run buffers are examined for RP-HPLC. This article is written in Russian. Contact: Inst. Elementoorgan. Soed. Im. A.N. Nesmeyanova, RAN, Moscow, Russia.]

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## NEW EMAIL ADDRESSES NEEDED

The email addresses for the following organizations have returned rejection notices to the Microgram Editor for the past three issues of *Microgram Bulletin*, and will therefore be dropped from the subscription list unless a corrected email address is provided by February 15, 2004. Note that the errors include “rejected-as-spam”, “mailbox full”, “user not found”, or “user unknown” messages. The Editor requests your assistance in contacting these organizations, determining if they wish to remain on the *Microgram* subscription e-net, and if so asking them to forward a valid email address to the [microgram\\_editor@mailsnare.net](mailto:microgram_editor@mailsnare.net) address.

Alabama Department of Forensic Sciences - Birmingham Laboratory

Alabama Department of Forensic Sciences - Montgomery Laboratory

Bureau of Alcohol, Tobacco, and Firearms Laboratory - San Francisco

Maryland State Police - Berlin Regional Laboratory

Massachusetts Department of Public Safety - Jamaica Plains

Ocean City (Maryland) Police Department Laboratory

Pennsylvania Office of the Attorney General

Tennessee Bureau of Investigation Crime Laboratory - Jackson (may have closed?)

Tennessee Bureau of Investigation Crime Laboratory - Memphis

U.S. Food and Drug Administration - Arkansas Regional Laboratory

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## THE JOURNAL/TEXTBOOK COLLECTION EXCHANGE

### *FREE TO ANY SUBSCRIBER*

Unless otherwise noted, requests for any of the following offerings should be emailed to the *Microgram* Editor at: [microgram\\_editor@mailsnare.net](mailto:microgram_editor@mailsnare.net) Requests should include complete mailing address information, **and should confirm that the provided destination is a “safe” (irradiation free) address.** Unless otherwise noted, in cases of competing requests, libraries have precedence. [Note: Postage for offerings from the DEA Office of Forensic Sciences will be covered by the Office.]

- 1) *Analyst* 2002;127(11,12); 2003;128(1).
- 2) *Analytical Chemistry* 1998 - 2001 (some issues missing).
- 3) *Journal of AOAC International* 1998 - 2002 (some issues missing).
- 4) *Journal of Forensic Sciences* 2000;45(6); 2001;46(2,3,4,5,6); 2002;47(All); 2003;48(1,2).

- 5) *Journal of Medicinal Chemistry* 2001 - 2002 (some issues missing).
- 6) *Journal of Pharmacology and Experimental Therapeutics* 1998 - 2002 (some issues missing).

The next offering of journals and textbooks will be in the April 2004 issue of *Microgram Bulletin*.  
**Subscribers are encouraged to donate surplus or unwanted items or collections; if interested, please consult the *Microgram* website for further instructions.**

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## THE DEA FY - 2004 STATE AND LOCAL FORENSIC CHEMISTS SEMINAR SCHEDULE

The remaining FY - 2004 schedule for the DEA's State and Local Forensic Chemists Seminar is as follows:

February 9 - 13, 2004  
 April 19 - 23, 2004  
 June 14 - 18, 2004  
 September 20 - 24, 2004

Note that the school is open only to forensic chemists working for law enforcement agencies, and is intended for chemists who have completed their agency's internal training program and have also been working on the bench for at least one year. There is no tuition charge for this course. The course is held at the AmeriSuites Hotel in Sterling, Virginia (near the Washington/Dulles International Airport). A copy of the application form is appended onto the October 2003 issue of *Microgram Bulletin*, and should be mailed to the Special Testing and Research Laboratory (Attention: Pam Smith or Jennifer Kerlavage) at: 22624 Dulles Summit Court, Dulles, VA 20166. For additional information, call 703/668-3337.

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## EMPLOYMENT OPPORTUNITIES

**1. Virginia Department of Criminal Justice Services** (Second Posting)  
**Position:** Forensic Scientist II (Controlled Substance Examiners) (Two Positions)  
**Location:** Division of Forensic Science, Eastern Laboratory, Norfolk, VA  
**Salary:** \$39,901 - \$65,540  
**Application Deadline:** Open Until Filled

The Department of Criminal Justice Services is seeking two qualified individuals to perform forensic chemical analyses of suspected controlled substances in the Division of Forensic Science, Eastern Laboratory.

**Duties:** Incumbents will: 1) Use current state-of-the-art methodologies and instrumentation to analyze controlled substances; 2) Prepare Certificates of Analyses on findings for use by the criminal justice system; and 3) Testify in court as a qualified expert for the Commonwealth at criminal proceedings as to the results of laboratory findings. Position requires occasional overnight travel. Employee will provide own transportation as required.

**General Requirements:** Knowledge of basic theoretical principles and applications of the instrumentation and methodologies used to analyze controlled substances required. Knowledge of laboratory safety procedures; quality assurance/quality control and laboratory practices; instrumental analysis (GC, GC/MS, FTIR, UV) and experience in forensic drug analysis required. Successful completion of a documented training program and/or demonstration of competency is required. Experience presenting testimony in a court of law, as an expert witness is preferred. Must be able to analyze data, develop sound conclusions, maintain accurate records, and analyze, and solve technical problems. Ability to communicate effectively orally

and in writing required. A baccalaureate degree in chemistry or other related science with sufficient chemistry courses is required; graduate degree is preferred. Valid driver's license and/or other means of reliable transportation required.

**Application Procedure:** Applicants must submit a state application (#10-012). Applications may be mailed to the Department of Criminal Justice Services, 805 East Broad Street, 10th Floor, Richmond, VA 23219, ATTN: Human Resource Office; emailed to gcolburn@dcjs.state.va.us or faxed to 804-786-6484. State application forms may be obtained by calling (804) 786-4246 or by downloading the form from the employment section of the DCJS web page at www.dcjs.org. For assistance, call Gene Colburn at (804) 786-6925.

Notes: Selected candidates must provide a DNA sample via a buccal swab (saliva sample), be fingerprinted, and pass a security background check. Equal Opportunity Employer.

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# Computer Corner

## Common Abbreviations Used in Digital Examinations

# #178

by Michael J. Phelan  
DEA Digital Evidence  
Laboratory

Digital evidence examination case notes often contain abbreviations. The use of abbreviations saves the examiner time in recording the details of the examination process. Abbreviations in a digital evidence laboratory fall into four categories – Subject Matter Specific, Organizational Specific, General Information Technology Terms, and General Forensic Science Terms.

No formal list of acceptable digital evidence examination abbreviations has been published so far. The Scientific Working Group on Digital Evidence (SWGDE) has begun to define technical terms commonly used, but the issue of abbreviations has thus far been ignored.

### Subject Matter Abbreviations

Subject matter specific abbreviations consist of terms commonly encountered during the course of a digital evidence examination that are technical in nature, but not necessarily mainstream information technology terms. Some of the more common subject matter abbreviations used in DEA case notes or on standard DEA Digital Evidence Laboratory forms include:

**A/V:** Anti-virus – refers to virus

detection software;

**B/E:** Best Evidence – refers to the collection of evidence where taking the original is not authorized or physically/technically impossible;

**B/U:** Backup – refers to a process to copy original evidence;

**DD:** Refers to a Unix or Linux command used to copy digital data;

**DUP:** Duplicate – refers to an exact copy;

**FTK:** Forensic Tool Kit – refers to a type of forensic examination software;

**K/W:** Key Word – refers to a term that is search globally across all digital evidence;

**LOG:** Logical – refers to data stored as files or a transaction files created by an operating system or application software;

**ORG:** Original – refers to the original evidence;

**OSB:** On-Site Backup;

**PHY:** Physical – refers to hard drive sectors that contain data;

**S/B:** Safeback – refers to a type of hard drive copy software;

**STEG:** Steganography – refers to a data hiding techniques involving encryption technology;

**VOL:** Volume – refers to the volume label on data storage media;

**W/B:** Write Block – refers to a hardware or software technique to prevent deleterious change to original evidence.

### Organizational Abbreviations

Organizational specific terminology will vary from one law enforcement or forensic organization to another. For example, at DEA the following terminology would be found in typical examination case notes:

**ASAC:** Assistant Special Agent in Charge;

**AUSA:** Assistant United States Attorney;

**CA:** Country Attaché;

**CFE:** Computer Forensic Examiner;

**CO:** Country Office;

**DA:** District Attorney;

**D/I:** Diversion Investigator;

**ET:** Evidence Technician;

**FD:** Field Division;

**G/S:** Group Supervisor;

**I/A:** Intelligence Analyst;

**LD:** Laboratory Director;

**POD:** Post of Duty;

**RAC:** Resident Agent in Charge;

**RO:** Resident Office;

**S/A:** Special Agent;

**SAC:** Special Agent in Charge;

**SFL9:** DEA's Digital Evidence Laboratory designation;

**TF:** Task Force;

**TFA:** Task Force Agent;

**TFO:** Task Force Officer;

**USAO:** United States Attorney's Office.

## General Technical Abbreviations

The digital evidence forensic discipline extensively utilizes general information technology terms. Precise definitions of these terms can be found in most computer textbooks. In fact, several terms have well recognized abbreviations (such as GB) while other terms do not have such universal recognition. Here is a basic list of general information technology technical terms commonly used in digital evidence forensic examination note taking. A comprehensive list could possibly occupy many pages and is as broad as the field of digital technology.

**AMD:** Advanced Micro Devices;  
**BIOS:** Basic Input/Output System;  
**CMOS:** Complementary Metal Oxide Semiconductor;  
**CD-R:** CD Recordable;  
**CD-RW:** CD Rewritable;  
**CPU:** Central Processor Unit;  
**CRC:** Cyclic Redundancy Check;  
**DAT:** Digital Audio Tape;  
**DVD:** Digital Versatile Disk;  
**DLT:** Digital Linear Tape;  
**DOC:** Microsoft Word File;  
**DOS:** Microsoft Disk Operating System;  
**EXE:** Executable Program;  
**FAT:** File Allocation Table;  
**GB:** Gigabyte;  
**HCS:** Heads, Cylinders, Sectors;  
**HEX:** Hexadecimal;  
**HTML:** Hypertext Markup Language;  
**IDE:** Integrated Device Electronics;  
**IP:** Internet Protocol;  
**JPG or JPEG:** Joint

Photographic Experts Group;  
**LBA:** Logical Block Addressing;  
**KB:** Kilobyte;  
**MAC:** Media Access Control or Macintosh Computer;  
**MB:** Megabyte;  
**MBR:** Master Boot Record  
**MD-5:** Binary data summary/algorithm;  
**MFT:** Master File Table;  
**MMX:** Multimedia Extension;  
**MPEG:** Motion Pictures Expert Group;  
**NVRAM:** Non-Volatile Read Only Memory;  
**OS:** Operating System;  
**PART:** Partition;  
**PCI:** Peripheral Component Interconnect;  
**POST:** Power-on Self Test;  
**RAID:** Redundant Array of Inexpensive Disks;  
**RAM:** Random Access Memory;  
**RISC:** Reduced Instruction Set Computer;  
**ROM:** Read Only Memory;  
**SCSI:** Small Computer System Interface;  
**SEC:** Sector;  
**TAR:** Type of data compression;  
**TB:** Terabyte;  
**USB:** Universal Serial Bus;  
**VER:** Version;  
**WINxx:** Microsoft Windows Operating System;  
**ZIP:** Iomega data storage cartridge or a type of data compression.

## General Forensic Abbreviations

The use general forensic science terminology can also be expected to be included in digital evidence examination case notes: Some forensic

science terms frequently referenced at DEA include:

**CON:** Control;  
**EX or EXH:** Exhibit;  
**HSE:** Heat Sealed Envelope;  
**M/K:** Make;  
**MOD:** Model;  
**P/N:** Part Number;  
**S/N:** Serial Number.

The list of abbreviations should be included as an appendix to the standard operating procedures and reviewed annually as part of the quality assurance review. The availability of this terminology will facilitate an external review of the case notes and forms.

Questions or comments?  
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